



DOMINICA.

ANNUAL REPORT

OF THE

Department of Agriculture

FOR THE YEAR

1947.

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REPORT ON THE WORK OF THE

DEPARTMENT OF AGRICULTURE

FOR THE YEAR

1947.

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ANNUAL REPORT

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DEPARTMENT OF AGRICULTURE

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PREFACE

Summary of Progress made in implementing the Agricultural Policy of Government.

I. Conservation of natural resources.

(i) to protect, manage, control the use of and improve all forest areas prescribed in accordance with the advice of the various Government Departments.

It was recorded in last year's report that the necessary Forestry legislation had been enacted. During the period under review a revised scheme for the provision of a Forestry Service was prepared and submitted. Approval has not yet been received. It has not been possible, therefore, to put the legislation into effect. It must be recorded that the continued delay in implementing this scheme is regrettable and any further undue delay must result in grave consequences.

(ii) to encourage the proper use of land by the adoption and practice of systems of agriculture which will conserve the soil and improve its fertility by

(a) advising as to the allocation of production in accordance with the findings of a soil survey;

(b) the investigation and demonstration of suitable systems of agriculture in the varying ecological systems of the Island.

(a) is outside the scope of the Local Department and will be under the direction of the Professor of Soil Science at the Imperial College of Tropical Agriculture. It is to be hoped that early approval will be given to the scheme for the soil survey of the Windward Islands. This is a project of the greatest importance to Dominica.

(b) Preliminary work in accordance with (b) has been continued on the Agricultural Stations.

II. Security of Land Tenure.

(i) to provide the means of regularising systems of land tenure for the protection of both the landlord and the tenant, and the conservation of the soil by the enactment of appropriate legislation. It has not yet been possible to take any action in this connection.

III. The maintenance and wherever economically practicable the expansion and improvement of crop production for export to the world's markets.

(i) to render advice, guidance, and such other forms of assistance as may be

practicable in the production of staple commodities for export to the world's markets by

- (a) scientific investigation ;
- (b) distribution (within practical limits) of selected plant material ;
- (c) the demonstration of suitable cropping methods ;
- (d) the provision of technical advice in methods of processing ;
- (e) the operation of a marketing organisation when this is necessary in the general interests of the community.

Investigational work in the course of the year included two Sugar Cane variety trials, a manurial trial on Vanillas with special reference to Root Disease, and trial plots of Tobacco, and of Manilla Hemp.

Selected plant material in the form of budded limes, oranges, grapefruit, miscellaneous citrus, mangoes, avocado pears and other economic plants were distributed from the Botanic Gardens, District Nurseries and Agricultural Stations. Work on (c) is being carried out at the Agricultural Stations, and advice on methods of processing products such as Vanilla and Cocoa is given through the Extension Service.

The Government Marketing Depôt was in operation during the year, and a Marketing Agency jointly operated by the Governments of St. Lucia and Dominica was set up in Barbados on a trial basis to market products such as fruit, vegetables and basketware from both islands.

IV. *The improvement of small scale (or peasant) agriculture.*

(i) to encourage the abandonment of the undesirable and wasteful systems of shifting cultivation commonly practised by small cultivators.

(ii) to encourage and to assist small cultivators to establish and maintain themselves under a permanent system of agriculture by :

- (a) the demonstration of permanent systems of small scale agriculture ;
- (b) facilitating whenever possible the provision of land to small cultivators for the practice of approved systems of agriculture ;
- (c) affording assistance wherever possible in the construction of houses and roads, and the provision of water supply and other social amenities.

All these objectives depend upon the execution of a land settlement scheme. Unfortunately with the present allocation under the Development and Welfare Act, it may not be possible to make provision for this scheme, but it is considered of such overriding importance that it is hoped special funds will be provided for this purpose.

V. *Stability of farming and improvement of food supply.*

(i) to encourage the practice of more stable systems of agriculture by the operation of Agricultural Stations in various parts of the island for the purpose of investigating and demonstrating methods of diversification, systems of crop rotation in short term cropping, mixed farming, the care and management of livestock, the preparation of pen manure and the use of chemical manures, and the preparation and grading of produce for market.

The five Agricultural Stations established have been maintained and operated during the year. The present programme of work does not include all the above objectives, but provision has been made for the necessary staff and funds in the Agricultural section of the 10 Year Plan to widen the scope of the stations to include all these objectives.

(ii) to urge the increased home production of the basic food requirements of the people by

- (a) the distribution of suitable varieties of the more important food crops ;

IMPLEMENTING THE AGRICULTURAL POLICY OF GOVERNMENT.

- (b) the demonstration of methods of producing food crops suitable for the preparation of a balanced diet ;
- (c) encouraging the rearing of livestock and the greater consumption of animal products ;
- (d) the demonstration of clean milk production ;
- (e) assisting in the organisation of marketing and storage of food crops ;
- (f) the introduction of protective tariffs for selected food crops or animal products whenever such action would be in the general interest of the community.

Planting material of local ground provisions together with seed of European Vegetables was available at Agricultural Stations. All stations were stocked with stud animals to encourage the local farmers to rear more livestock and thus increase animal food available for consumption. It has not been possible to implement (d) and (e), while there was no need for (f).

VI. *Efficiency in the operations of production, processing and distribution of agricultural products.*

(i) to encourage the practice of efficient methods of production, processing and distribution of agricultural products by

- (a) the teaching of crop and animal husbandry in the schools ;
- (b) the provision of facilities for training agricultural instructors, overseers and a nucleus of small farmers ;
- (c) the demonstration of approved methods of agricultural production and livestock management ;
- (d) the provision of facilities for obtaining agricultural credit ;
- (e) the provision of technical advice in methods of processing ;
- (f) the encouragement of the formation and operation of co-operative organisations of producers ;
- (g) the adoption of measures to reduce the common practice of praedial larceny, and ultimately to eradicate the evil.

No action has been possible with regard to (a), (d), (e), (f) and (g).

The urgency of (b) has been recognised, and allowance has been made in the 10 Year Plan for an Agricultural School. It can be confidently stated that unless some form of tuition is organised in the very near future for the training of Agricultural Instructors, the efficiency of the Department will be seriously impaired, in fact it will hardly be possible to maintain the Extension Services. There is also a constant demand from estate owners for trained men who are at present not available. Finally, a sound agricultural training for future owners of land must inevitably result in raising of the standard of agriculture, the sole means of raising the standard of living.

PART I.

AGRICULTURE IN THE COLONY.

WEATHER CONDITIONS.

The meteorological data for the year is summarised in Appendix V, and observations on the data are recorded below:—

(a) **Rainfall.**—Returns for 23 recording stations and monthly rainfall for the Botanic Gardens from 1928-1947 are shown in the Appendix. At the Botanic Gardens precipitation for the months of January, May, July and December was above average ; precipitation for June, August, October and November was below average, whilst average falls were recorded for February, March, April and September. The total rainfall for the year was 72.20 as compared with 73.07 for the previous year.

(b) **Barometer.**—The highest reading recorded was 30.13 inches on 10th May, and the lowest was 29.80 inches on 29th October, and 26th and 27th November.

(c) **Temperature.**—The highest maximum temperature recorded was 95°F. on 15th September, and the lowest minimum 62°F. on 1st, 2nd and 8th February.

PRODUCTION AND EXPORT.

Export statistics for the past six years are shown in the following table:—

AGRICULTURAL EXPORTS — DOMINICA, 1942-44.

			1942.			1943.			1944.			
			Quantity.	F.O.B. Value £			Quantity.	F.O.B. Value £			Quantity.	F.B.O. Value £
Lime Products :												
Concentrated Juice,	galls.	25,288	1,887	15,985	1,271	2,673	219					
Raw Juice,	galls.	138,594	9,451	152,429	7,581	189,415	19,308					
Lime Juice, Cordial		—	—	—	—	—	—					
Distilled Oil,	lbs.	25,284	54,610	33,126	46,804	40,706	57,386					
Ecuelled Oil,	"	354	976	960	2,231	1,739	4,264					
Oils in Solution,	"	1,897	4,058	—	—	—	—					
Green Limes,	brls.	828	1,880	605	756	499	524					
Pickled Limes,	"	—	—	—	—	—	—					
			72,862			58,643	81,701					
Other Fruits and Allied Products :												
Oranges,	C/crates	6,946	3,598	8,906	3,524	9,912	7,283					
Orange Oil,	lbs.	217	165	1,703	1,230	883	621					
Grapefruit,	C/crates	3,019	1,444	5,243	1,800	7,572	3,501					
Grapefruit Juice,	galls.	—	—	—	—	—	—					
Grapefruit, Oil	lbs.	—	—	—	—	—	—					
Bananas,	bunches	17,658	1,715	4,223	422	4,047	394					
Mangoes,	C/crates	2,689	668	3,982	1,169	3,958	1,215					
Avocado Pears,	T/crates	729	74	868	141	715	119					
Miscellaneous		—	1,941	—	1,756	—	2,822					
			9,305			10,042	15,955					
Cocoa Products :												
Cocoa, Raw	lbs.	250,973	6,318	401,819	6,960	332,520	7,328					
Cocoa, Prepared	lbs.	267	11	1,777	77	256	15					
			6,329			7,037	7,343					
Coconut Products :												
Copra,	lbs.	453,204	3,395	591,892	6,977	509,400	7,712					
Coconuts,	No.	645,349	3,436	359,046	2,244	895,031	5,594					
			6,831			9,221	13,306					
Sugar Products :												
Rum,	galls.	7,417	1,213	9,935	1,738	12,456	2,108					
Bay Products :												
Bay Oil,	lbs.	24,657	5,523	31,232	6,270	24,275	6,265					
Bay Rum,	galls.	598	149	411	103	287	73					
			5,672			6,373	6,338					
Spices :												
Vanilla,	lbs.	18,019	44,480	28,206	39,714	50,833	68,399					
Nutmegs		—	—	—	—	—	—					
Ginger	lbs.	3,014	48	6,919	145	3,693	77					
			44,528			39,859	68,476					
Other Products :												
Coffee,	lbs.	4,699	131	4,536	132	2,459	81					
Vegetables		—	—	—	—	—	—					
Farine		—	—	—	—	—	—					
Hides & Skins		—	—	—	—	—	—					
Leather. Unmanufac'd		—	—	—	—	—	—					
Turtle Shells		—	—	—	—	—	—					
Tobacco, Cigars &		—	—	—	—	—	—					
Cigarettes,	lbs.	8,706	1,798	11,094	2,456	5,028	1,124					
Miscellaneous		—	2,128	—	1,845	—	5,349					
			4,057			4,433	6,554					
Forest Products :												
Hardwood,	ft.	66,027	752	74,448	611	59,722	558					
Firewood,	Cords	781	363	1,609	1,100	2,064	1,732					
Canoe Shells		—	—	—	—	—	—					
Shingles		—	—	—	—	—	—					
Charcoal		—	—	—	—	—	—					
Locally made Boats		—	—	—	—	—	—					
Baskets		—	—	—	—	—	—					
Other Forest Products		—	14	—	38	—	16					
			1,129			1,749	2,306					
Value of Local Exports ...			151,926			139,095	204,087					
Total Re-Exports ...			3,375			5,363	6,247					
Value of Total Exports ...			155,301			144,458	210,334					

AGRICULTURAL EXPORTS — DOMINICA, 1945-47.

		1945.		1946.		1947.	
		Quantity.	F.O.B. Value £	Quantity.	F.O.B. Value £	Quantity.	F.O.B. Value £
Lime Products :							
Concentrated Juice,	galls.	50	4	182	13	3,486	653
Raw Juice,	galls.	317,318	33,534	282,113	21,023	344,054	36,340
Lime Juice, Cordial	"	—	—	—	—	—	—
Distilled Oil,	lbs.	19,745	33,217	27,934	32,024	26,888	30,068
Ecuelled Oil,	"	3,747	10,318	2,944	6,061	1,503	3,015
Oils in Solution,	"	1,582	2,562	195	—	4,146	—
Green Limes,	brls.	727	825	1,620	1,771	1,765	2,693
Pickled Limes,	"	—	—	—	—	—	—
			80,560		60,892		72,169
Other Fruits and Allied Products :							
Oranges,	C/crates	9,326	5,159	9,521	5,036	8,845	7,951
Orange Oil,	lbs.	720	710	1,424	1,353	651	223
Grapefruit,	C/crates	7,264	4,092	5,219	2,719	6,767	4,524
Grapefruit Juice,	galls.	—	—	512	87	11,730	1,613
Grapefruit, Oil	lbs.	—	—	—	—	1,085	780
Bananas,	bunches	4,132	344	3,602	232	7,263	1,530
Mangoes,	C/crates	3,294	825	5,940	1,114	6,609	1,680
Avocado Pears,	T/crates	3,360	546	3,199	336	13,965	1,575
Miscellaneous	val	—	4,757	—	6,662	—	1,336
			16,433		17,539		21,215
Cocoa Products :							
Cocoa, Raw	lbs.	296,788	7,593	200,243	3,875	469,858	33,009
Cocoa, Prepared	lbs.	64	2	20	1	84	3
			7,595		3,876		33,012
Coconut Products :							
Copra,	lbs.	560,765	9,095	670,663	11,901	610,895	11,729
Coconuts,	No.	1,476,496	11,832	387,069	2,256	510,627	3,178
			20,927		14,157		14,907
Sugar Products :							
Rum,	galls.	8,322	1,744	4,866	1,088	8,378	1,768
Bay Products :							
Bay Oil,	lbs.	31,877	5,942	24,199	4,532	24,220	4,996
Bay Rum,	galls.	195	60	170	53	201	84
			6,002		4,585		5,080
Spices :							
Vanilla,	lbs.	64,984	92,078	47,819	70,130	15,644	21,540
Nutmegs	—	—	—	—	—	—	—
Ginger	lbs.	2,242	40	2,833	30	5,881	43
			92,118		70,160		21,583
Other Products :							
Coffee,	lbs.	658	22	142	2	22	1
Vegetables	—	—	—	—	—	—	—
Farine	—	—	—	—	—	—	—
Hides & Skins	—	—	—	—	—	—	—
Leather, Unmanufac'd	—	—	—	—	—	—	—
Turtle Shells	—	—	—	—	—	—	—
Tobacco, Cigars &	—	—	—	—	—	—	—
Cigarettes,	lbs.	8,111	2,168	787	416	1,940	1,640
Miscellaneous	—	—	3,003	—	1,826	—	7,394
			5,193		2,244		9,035
Forest Products :							
Hardwood,	ft.	12,638	113	18,976	170	10,488	87
Firewood,	Cords	2,242	2,242	2,277	2,210	1,491	1,514
Canoe Shells	—	—	—	—	—	—	—
Shingles	—	—	—	—	—	—	—
Charcoal	—	—	—	—	—	—	—
Locally made Boats	No.	1	3	—	—	—	—
Baskets	—	—	—	—	—	—	—
Other Forest Products	val	—	1	—	—	3	1
			2,359		2,380		1,602
Value of Local Exports ..							
			232,931		176,921		180,371
Total Re-Exports ...							
			8,196		14,975		20,052
Value of Total Exports ...							
			241,127		191,896		200,423

PRODUCTION AND EXPORT.

The monetary value of exports for the year shows an increase of 4.6% as compared with the previous year. The most striking feature of the export picture is the sharp drop in volume and value of vanillas. During the preceeding two years this product topped the list of exports; in 1945 accounting for 38% and in 1946 for 36% of total value. This year it occupied third place and accounted for only 10.7%. Increases in total value exported were recorded for Limes and Lime products, Other Fruit, Cocoa, Coconuts and Copra and Rum. It is of interest to observe that if the export value of the Vanilla Crop had been equal to that of last year, the total value of exports would have been the highest since 1920.

The total value of exports for 1947, excluding vanillas was £178,833 as compared to £121,766 for 1946 or 31.9% higher.

Observations relating to the following Industries are recorded below :—

<i>Product.</i>	<i>Barrels of Fruit.</i>					
	1942.	1943.	1944.	1945.	1946.	1947.
Distilled Lime Oil ..	74,790	96,408	116,701	47,994	74,970	76,140
Ecuelled	2,832	7,680	13,912	29,976	23,552	12,024
Oils in Solution ..	6,323	—	—	5,273	682	14,511
Green Limes	828	605	499	727	—	1,765
Pickled Limes	—	—	—	—	1,771	—
	84,773	104,693	131,112	83,970	100,975	104,440

The figures for any one year do not necessarily represent annual production as there may be a carry-over of products at the end of a calendar year. Nevertheless, the seven year average of 105,581 barrels is a reliable guide to present production. The main feature of interest was the increase in volume of raw juice which was exported. This figure was the highest since 1941.

Countries of destination.—The destination of Lime products is set out in the following table :—

<i>Product.</i>	<i>Country of Destination.</i>					
	United Kingdom.	Canada.	British Possessions.	United States.	Foreign Countries.	TOTAL.
Concentrated Juice gals.	—	—	3,486	—	—	3,486
Raw Juice ..	106,365	57,476	163,647	9,560	7,006	344,054
Distilled Oil lbs.	14,671	1,202	6,915	3,535	565	26,888
Ecuelled Oil ..	945	70	—	488	—	1,503
Oils in Solution ..	2,199	1,947	—	—	—	4,146
Green Limes brls.	—	1,087	678	—	—	1,765

PRODUCTION AND EXPORT.

Vanillas.—Exports of cured beans decreased by 32,175 lbs. and the value by £48,590. This startling decrease was not due to a falling off in production, but was the result of a slow market in the United States of America. Reports of alleged shipments of poor quality Dominica beans came from American buyers. Coupled with these statements was the coming back on the market of Madagascar beans. Heavy stocks remained in shippers' hands at the close of the year.

Destination.—All vanilla was exported to the United States of America.

Coconut Products.—The production of Copra was 610,895 lbs., a decrease of 59,768 lbs. as compared with last year's production. Exports of coconuts showed a slight increase. Unfavourable weather conditions account for the decrease in production. Higher prices for copra account for the increased value of exports.

The second Oils and Fats Conference was convened by the Comptroller for Development and Welfare in the West Indies, and held at his headquarters in Barbados from 18th-22nd July, 1947. The conference recommended that the export prices of Coconuts, Copra, Edible Oil and derived products should be determined as follows for the period of the five years of the agreement.

First year	£42. 10. 0 per ton F.O.B.
Second year	£42. 10. 10 „ „ „
Third year	Price to be negotiated within the limits £40 to £45 per ton F.O.B.
Fourth year	Price to be negotiated within the limits £35 to £45 per ton F.O.B.
Fifth year	Price to be negotiated within the limits £35 to £45 per ton F.O.B.

Under this agreement Copra required by Barbados will be supplied from the Windward Islands of which Dominica is expected to supply 300 tons.

Cocoa.—Weather conditions favoured Cocoa production which was 469,858 lbs. more than double that of last year. Increased prices also caused every pod to be harvested, and more attention to be given to cultivations. The bulk of the Cocoa exported was destined for the United States of America which absorbed 449,211 lbs. The balance of 20,647 lbs. was exported to Barbados and the Leeward Islands.

Bananas.—No Bananas were purchased by the Dominica Banana Association during the year. Exports totalled 7,263 bunches of which 2,389 were shipped by private interests to the U.S.A. The remainder was exported to the neighbouring islands.

Rum.—There were eight distilleries in operation during the year. The production of rum has shown a slight decrease as will be observed in the following table which sets out production for the past six years:—

1942	....	....	....	56,834 gallons
1943	....	....	....	74,120 „
1944	....	....	....	84,852 „
1945	....	....	....	91,898 „
1946	....	....	....	98,668 „
1947	....	....	....	97,706 „

The quantity exported amounted to 8,378 gallons as compared to 4,866 gallons for the previous year. The Leeward Islands were the sole importers.

Forest Products.—During the year a small sawmill and processing plant for dressing lumber was established. This is a welcome venture, and coupled with the proposed forestry scheme should result in the production of a product of far superior quality than hitherto.

Although exports were negligible, there was a large local trade in boards, scantling and shingles.

PESTS & DISEASES.

Citrus.—The incidence of withertip of limes (*Glæosporium limetticolum*) was not above average. No severe outbreak of Citrus weevil (*Diaprepes spp.*) was reported. Fruit piercing moths caused more losses than in the previous year.

The following measures for controlling this latter pest as advocated by Mr. R. G. FENNAH, B.Sc., A.I.C.T.A. are recommended for trial :—

- (a) Spraying fruit with DDT Emulsion. The leaves of the tree may also be sprayed. The object of this is to ensure that moths do not live to bite twice.
- (b) Piling up cutlassed grass and bush during October, November or December in small heaps between the tree rows, and burning them at dusk during the critical months to provide a "smudge", the smokier the better.
- (c) As a longer range policy, the planting of King or Mandarin Oranges around the fields, and when in fruit spray heavily with DDT Emulsion. These trees would act as a "Trap-crop."

Alternately (or in addition) Governor Plum (*Flacourtia*) could be used, but would be rather large to spray when in fruit.

Vanilla.—*Fusarium Batatis* var. *Vanillæ* continues to be a limiting factor to production of this crop. The incidence was not abnormally high during the period under review. In the light of present knowledge of this disease, the following control measures are recommended :—

- (a) Use of long healthy sets for planting.
- (b) Correct degree of shading.
- (c) Avoidance of over pollination of flowers.
- (d) The application of crushed limestone at the rate of 6 lbs. to each plant on heavy clay acidic soils, and lesser quantities on less acidic and lighter soils.

Tobacco.—The incidence of Tobacco Mosaic (*Nicotiana Virus*) was reported as high during the year. Leaf-eating Caterpillars (*Protoparce spp.*) also were responsible for some loss.

Bananas.—Panama Disease (*Fusarium Cubense*) was widespread and has severely restricted the area under Gros Michel Bananas, and the industry based on this variety can no longer be considered an economic proposition.

Sigatoka Disease (*Cercospora Musæ*) was observed in most banana areas, and control measures would probably be necessary if there was any appreciable increase in the acreage under this crop.

PART II.

WORK OF THE DEPARTMENT.

PUBLIC GROUNDS.

Grounds at the Library, Memorial Park, Morne Bruce and Military Cemetery were maintained in as attractive a manner as circumstances permitted. The Cabbage Palms (*oreodoxa oleracea*) planted out in the Military Cemetery last year have all survived and made good growth.

BOTANIC GARDENS.

Decorative Section.—This was maintained at the usual high standard of upkeep. A new feature was the introduction of Flower beds which add a touch of colour to the green lawns. *Bauhinia Reticulata* an introduction from the U.S.D.A. Federal Experiment Station at Mayaguez, Porto Rico in 1944, bloomed for a long period and was particularly attractive.

Economic Section.—This area is mainly given up to plant nurseries. Activities relating to this section are referred to in the appropriate parts of the text.

CROP OBSERVATION AND MULTIPLICATION PLOTS
AT BOTANIC GARDENS AND AGRICULTURAL STATIONS.

(i) **Sweet Potatoes.**—Seven varieties viz. B 5, B 29, B 31, B 44, B 64, V 52 and Caroline Lee were cultivated to provide plant material for distribution.

(ii) **Yams.**—Ten varieties viz. Moonshine, Moon, Statia smooth, Statia Rough, Lisbon 638, Oriental, Bottle-neck Lisbon. Special Red Lisbon, Barbados Lisbon, and Silk Yam were maintained to provide plant material for distribution.

(iii) **Pigeon Peas.**—Local varieties were grown at all Agricultural Stations, in addition, plots of the varieties Tobago and La Saiba were established at Grand Bay and La Plaine Agricultural Stations.

(iv) **Sugar Cane.**—Varieties B 41211 and B 44341 received from the Plant Quarantine Station were established at the Botanic Gardens. At all Agricultural Stations except La Plaine the varieties B 37161, B 4098 and B 3439 were grown for providing plant material.

(v) **Tropical Kudzu.**—Plots were established at Botanic Gardens, Colihaut Agricultural Station, Londonderry Agricultural Station and La Plaine Agricultural Station. Its performance in all cases was very promising and more extended plantings are contemplated.

(vi) **Indigofera endecaphylla.**—The plot established last year at the Botanic Gardens was maintained. In trial feeding to livestock the foliage was readily eaten by horses, cattle, goats and sheep.

(vii) **Grasses.**—The following fodder grasses were cultivated :—

Station.	Type of Grass.
Botanic Gardens.	Elephant Grass (<i>Pennisetum purpureum</i> .)
	Guatemala Grass. (<i>Tripsacum laxum</i> .)
	Coloniao Grass (<i>Panicum Spectabile</i> .)
	Sour Grass. (<i>Andropogon pertusus</i> .)
La Plaine	Elephant Grass.
	Coloniao Grass.
	Guinea Grass.
	Sour Grass.
Londonderry	Elephant Grass.
	Guatemala Grass.
Portsmouth	Elephant Grass.
Colihaut	Elephant Grass.
	Sour Grass.

LIME EXPERIMENT STATION.

Elephant grass has been the best all round performer. Grasses are cut when six to eight weeks to obtain the optimum nutrient value.

(viii) **Dwarf Coconuts.**—Plots of this type of Coconut were established at the following stations :—Portsmouth 1944, Grand Bay 1944 and Londonderry 1945. In all cases growth has been very satisfactory and the palms are remarkably free from disease.

(ix) **Cocoa.**—Data concerning yield and self-compatibility were recorded from selected trees at the Botanic Station. Individual tree records were also continued at Picard Estate. Five more clones have been added to the provisional Dominica selections : these are all from Clark Hall Estate in the Layou Valley.

An area was selected last year at Londonderry Agricultural Station as a suitable site for establishing a plot of Cocoa cuttings, and ground shade in the form of Bananas, Tannias and *Tephrosia Candida* planted. During the year 40 cuttings comprising three clones were established. Growth to date has been very satisfactory and no replacements were necessary. Plants were spaced 9' x 9' and two weeks prior to planting each hole received a liberal dressing of Farm Yard manure

(x) **European Vegetables.**—A variety of vegetables including Tomatoes, Carrots, Cabbages, Cauliflower, Beans, Lettuce, Cucumber and Egg plant were grown in Demonstration plots at the Botanic Gardens. Mention should be made of a variety of Egg plant (Rosita) obtained from Puerto Rico which for the second year in succession has proved resistant to the wilt disease which attacks all other varieties tried.

LIME EXPERIMENT STATION.

(a) **Limes.**—The conservation measures in the form of contour drains commenced last year were continued, and all fields now have adequate drainage and protection. All plots were hand forked and fertilizer (10. 8. 4) applied at the rate of 4 lbs. per tree.

Plot 5. Planting of this plot which was commenced last year was completed. This plot now consists of limes budded on Seville Orange (Gosport), the only plot of its kind in the Station.

The crop for the Station amounted to 1,326 barrels as compared with 949 barrels for the previous year. Sale was by quarterly tender.

For purposes of comparison the previous year's prices are also quoted, the following prices being received each quarter :—

	1946	1947
1st Quarter	8/8	8/8
2nd „	8/8	8/8
3rd „	8/8	8/8
4th „	8/8	8/8

(b) **New Varieties of Citrus.**—A plot of $\frac{1}{4}$ acre in size was planted in the following new varieties, Sampson Tangelo, Ruby Grapefruit, Glen Red Grapefruit, Calamondin, Armstrong Seedless Orange and Cleopatra Mandarin. The plot which is on sloping land was first contour drained and lined on the contour. Nurse crops in the form of Bananas and Tannias were established together with *Tephrosia Candida* as a cover crop before the citrus plants were put out in the field.

(c) **Cashew Nuts.**—This plot has continued to make good growth and all trees flowered and fruited during the year.

PLANT DISTRIBUTION.

Plant nurseries were maintained at the following places during the year: Botanic Gardens, Goodwill Estate, District Agricultural Stations, Petite Coulibri, Point Michel, Mahaut, Vieille Case, Atkinson, Rosalie and Delices. Plants distributed during the current year are detailed below :

PLANT DISTRIBUTION.

(a) Budded or Grafted Plants.

Washington Navel Orange	3,586 plants
Other Oranges	1,782 ..
Grapefruit	1,319 ..
West Indian Limes	22,217 ..
Other Citrus	538 ..
Avocado Pears	263 ..
Mangoes	103 ..
	29,808 plants

Other Economic Plants.

Sour Orange Stocks	350 plants
Seville Orange Stocks	5,500 ..
Wild Grapefruit Stocks	26,460 ..
Calamondin	13 ..
Cocoa Seedlings	4,781 ..
Cocoa, Rooted Cuttings	53 ..
Cocoa Pods	75 pods
Coffee Seedlings	2,793 plants
Nutmeg Seedlings	3,327 ..
Mangosteens	3 ..
Dwarf Coconuts	116 ..
Sugar Cane	34,809 cuttings
Yams	2,358 lbs.
Black Pepper	29 plants
Fodder Grass	3,425 cuttings
Miscellaneous	3,260 plants
European Vegetable Seeds	234 lbs.

PLANT INTRODUCTIONS.

Seeds and plant material introduced during the year comprised the following :—

Onion Seed	1 Pkt. seeds	Agricultural Department, Montserrat.
Washington Navel Orange	100 buds	Glen St. Mary Nurseries Co.,
Parson Brown Orange	100 ..	Florida
Ruby Blood Orange	100 ..	do.
Orlando Tangelo	100 ..	do.
Minneola Tangelo	100 ..	do.
Cleopatra Mandarin	1 Pkt. seeds	University of California,
Sampson Tangelo	1	Experiment Station,
Calamondin	1	California.
Koethen	1	do.
Pearl Tangelo	1	do.
Sugar Cane - B 41211	7 Cuttings	Plant Quarantine Station,
Sugar Cane - B 44341	7 Cuttings	Trinidad.
Cocoa - GS 29	11 Budsticks	Cocoa Agronomist,
Cocoa - GS 5	8 ..	Grenada.
Cocoa - GS 9	11 ..	do.
Cocoa - GS 33	5 ..	do.
Cocoa - GS 65	11 ..	do.
Derris - Creeping Sarawak	23 Cuttings	Department of Agriculture,
Derris - Chang	23 ..	Jamaica.
Egg Plant "Rosita"	2 ozs.	Isabela Experiment Station, Puerto Rico.

LIVESTOCK.

LIVESTOCK.

(a) **Stud Animals.**—The following table sets out the number of animals and the areas in which they were stationed during the year :—

Location of Stud Centre.	Type of Animal.				
	Bull	Sheep	Goat	Stallion	Pig
Roseau (Botanic Gardens)	1	1	—	1	—
Londonderry (Agric. Station)	1	1	—	—	—
La Plaine (Agric. Station)	1	1	1	—	—
Colihaut (Agri. Station)	—	—	1	—	—
Grand Bay (Agric. Station)	1	1	—	—	1
Portsmouth (Agric. Station)	1	1	—	—	—
Totals	5	5	2	1	1

The operation of Stud Centres is the main livestock activity of the Department, and the table below sets out the return of services for the past four years :

Animal.	Number of Services and Year.				Total 4 years.
	1944.	1945.	1946.	1947.	
Bull	153	331	478	330	1,292
Sheep	93	136	79	81	389
Goat	145	56	50	11	262
Horse	5	30	22	27	84
Pig	—	—	36	70	106

(b) **Poultry.**—Poultry establishment was reduced from last year from 11 pens to 6. Three pens were maintained at Goodwill Estate to where they were transferred from the Botanic Gardens. One pen each was maintained at three agricultural stations viz. Colihaut, Portsmouth and Londonderry. The following table sets out the distribution of eggs during the past four years :—

Year.	1944.	1945.	1946.	1947.	Total.
Eggs distributed	717	1,376	1,836	885	4,814

(c) **Ducks.**—Pekin Ducks were distributed to all Stations from the stock at Roseau. Eggs distributed totalled 61 for the year.

(d) **Rabbits.**—Before the end of the year it was decided to close down all rabbitrys except La Plaine. The cost of upkeep was high, and little use was made of the service facilities. In the course of the year 48 services were given and 22 rabbits sold.

EXTENSION WORK.

This consists of giving advice to all growers through personal visits, demonstration plots and all other appropriate measures.

OBSERVATION OF NATURAL RESOURCES.

(a) **Advisory.**—The district organisation worked satisfactorily, though the absence of one Agricultural Assistant from September emphasized the bareness of the Senior staff, ing arrangements, and this shortage of staff reflected on the efficiency of the Extension Service.

Mention must again be made of the limited range which one Instructor can adequately cover due to the difficult nature of the country, and the very inadequate communications. Visits were paid to small holdings and Estates, and the demand for help and advice taxed the staff to the utmost. It is gratifying nevertheless, as it indicates that the work of the Department is valued and appreciated.

The 4 H. Club movement under the direction of the Social Welfare Officer now consists of five Clubs. The District Instructor is in each case actively associated with the movement.

(b) **Agricultural Stations.**—The five stations have been maintained. The various objectives are being put into operation as circumstances permit. Shortage of funds restricted activities somewhat.

(i) **Plant Nurseries.**—Plant materials in the form of budded and grafted plants, ground provisions, especially sweet potatoes and yams, seed of European vegetables fodder grasses were available for distribution at all Agricultural Stations.

(ii) **Livestock Improvement.**—Stud animals were available at all Stations. (For details see Livestock Section).

(iii) **Observation Plots** were put down at all Stations. (Relative information is supplied under Observation Crops).

(v) **Investigational Work** on the Stations was confined to experiments on Vanilla with special reference to root disease, and trial plots of tobacco.

CONSERVATION OF NATURAL RESOURCES.

Further advances can be claimed in making growers appreciate the need for conservation measures. The Extension Staff have done very good work in the laying out of grass strips, contour drains and other anti-erosion measures. Attention is being given to maintaining the work which has been initiated.

It is most regrettable to have to record the continued wastage and wanton destruction of the forest resources. Every year since 1943 attention has been directed in the annual report of the Agricultural Department to the urgent need for the provision of a Forestry Service. In 1946 the Forest Soil and Water Conservation Ordinance was enacted. At the end of 1947 it is still a dead letter for want of the necessary staff to enforce it.

A tangible expression of the evil effects of the uncontrolled exploitation and indiscriminate cutting of the Forest is revealed in the following :

- | | | |
|-----|---|---------|
| (a) | Loss of Revenue by Royalties on 400,000 board feet of lumber cut annually on Crown Lands from 1942-1947 | £4,500 |
| (b) | Amount spent on storm damage through flooding of rivers and landslips from 1942-1947 | £14,941 |

AGRICULTURAL EDUCATION.

(a) **Pupil Apprentice Course.**—Fourteen pupils were in attendance throughout the year. Four completed the course and three new ones were enrolled.

(b) **Refresher Course.**—A refresher course for Agricultural Instructors was held in Roseau from 2nd to 5th April.

(c) **Periodicals.**—The following periodicals were received and circulated amongst the staff.

The Small holder and Home Gardening.

LABORATORY.

The Journal of the Jamaica Agricultural Society.
 The Farm Journal of British Guiana.
 Proceedings of the Agricultural Society of Trinidad and Tobago.
 The Negro Farmer.
 The American Small Stock Farmer.

LABORATORY.

Results of chemical analyses and tests are set out hereunder.

Product.	Type of Test.	No. of Samples.
Manure	Analysis	25
Lime Oil	Sp. Gravity	—
Lime Juice, Conc'd ..	Citric Acid content ..	—
Lime Juice, Raw	" " " " " " " "	11
Ray Oil	Phenol content	6

STAFF NOTES.

Mr. L. L. DE VERTEUIL, Agricultural Superintendent, was absent from the Colony on vacation leave from January 1st to February 10th. During this period Mr. A. V. Wang Ping, Agricultural Assistant, performed the duties as Officer-in-Charge of the Department.

Mr. D. A. PERKINMAN, Agricultural Assistant, Northern District, was on vacation leave from July 22nd to September 19th.

Mr. G. J. STEWART, Senior Agricultural Inspector, was on vacation leave from September 8th to October 9th.

Mr. E. C. BRYCE, Foreman, Botanical Gardens, was on vacation leave from February 24th to March 22nd.

Mr. P. S. BUCK, 2nd Class Clerk, was on vacation leave from September 11th to 13th September.

Mr. C. A. SHENOREN, 2nd Class Clerk, who was on secondment to the Census Staff returned to the Department on January 1924, and Mr. R. A. WHEATON who was acting in his stead returned to his substantive post.

Mr. A. T. WANG PING, Agricultural Assistant, who was on secondment from British Columbia, completed a six-month tour of duty in the Department and returned to his home on December 10th.

OFFICIAL VISITS.

Mr. R. JOHNS, C.B.E., Agricultural Adviser to the Comptroller, and Mr. C. C. SKEETE, Director of Agriculture for the Windward Islands visited the Island from 1st to 21st June. The most valuable of their visit was in regard to collaboration with local authorities the Agricultural Section of the 10 Year Scheme Plan.

Mr. F. W. CLARK, Crown Agent, Windward Islands, visited the Island from March 24th to April 2nd. The purpose of his visit was to advise on the preparation of a scheme for the improvement of the Cocoa Industry. Mr. Clark delivered an address to the Dominica Farmers Association on 24th March, the text of which is reproduced in Appendix V of this report.

ACKNOWLEDGEMENTS.

I am anxious to record the appreciation of the Staff of the Department to all those officials and assistants who have co-operated in the work of the Department. Special mention should be made of the Hon. R. B. SULLIVAN, of Beaufort Estate and Mr. I. N. SULLIVAN, who have co-operated with the Department in Sugar cane variety trials and in all matters through their efforts that the improved varieties of cane have to a great extent

replaced the old varieties. The Department is also indebted to the Hon. W. E. Williams of Clark Hall Estate and Mr. A. S. Balthazar of Pined Estate for the facilities granted the Department in Cocoa selection work.

The local press has rendered valuable service in giving publicity to the Department's activities. The tracks of the Department have extended to comfort the Chief Commissioner to visiting officers.

Finally, I wish to pay tribute to the good work of the staff during a difficult year.

L. L. DE VERTUELL

Apicultural Superintendent.

APPENDIX I

Report on the Government Fruit Packing & Marketing Depot and Cold Storage for the year ending 31st December, 1947

FRUIT TRADE

Intercolonial. The lack of transport facilities to the foreign Markets continued to dictate the policy of exploiting the potentialities of West Indian markets in general, and concentration of our efforts towards the establishment of a marketing organisation in Barbados which provided a steady market for our products.

In this regard it is gratifying to record that with the assistance of Imperial Loans and funds provided by the Governments of Trinidad and St. Lucia, an organisation known as the "Trinidad and St. Lucia Marketing Agency" was established in Barbados and opened for business on the 1st July.

The Agency was equipped to handle and market fruits, vegetables, mushrooms and other products to be supplied by the local Marketing Boards in St. Lucia and Trinidad.

Experience pointed to the necessity of regular transport facilities for the development of this trade with Barbados, and by means of a subsidy the services of the M. V. *Queen Mauda* was obtained for a fortnightly service between Barbados, Trinidad and the Leeward Islands.

It was the duty of this Department to obtain supplies and organise shipment of fruits and vegetables from Trinidad to the Agency in Barbados, a function for which it was responsible due to the organisational structure of Markets of Eastern type.

In the initial stages the functions of the Depot in the marketing of produce to the Agency were somewhat confined by the lack of means of contact with customers of variety at the two districts, and apparent shortages with consequent high prices to the Retail Market which produced a. l. f. costs in excess of the Retail (Wholesale) Prices in the Barbados market.

The greater proportion of fruits and vegetables consigned to the Agency was obtained from small cultivators who were unwilling to make our requirements as per their needs, more than that of outright sales, and having regard to the factor of local prices in the retail market the maximum retail prices in Barbados could be ascertained with the anticipated volume of trade through the Agency was not realised.

The first consignment of fruit and vegetables from Trinidad was forwarded to the Agency in Barbados per M. V. *Queen Mauda* on the 1st July, and during the six months of operation to the end of the year 26 other consignments of produce were consigned to the Agency for disposal to the trade.

The following table shows the quantities and a. l. f. values of the produce consigned shipped to the Agency and the gross returns received from the Agency.

APPENDIX I.

<i>Produce.</i>	<i>Size of Pack- age in cu. ft. or Unit.</i>	<i>C. I. F. Value</i>		<i>Gross Returns.</i>
		<i>Quantity.</i>	<i>Value.</i>	
Oranges	2'	2,130	\$8,266.10	6,643.53
Grapefruit	2'	440	1,396.60	839.89
Plantains	Bunches	1,004	1,927.27	1,689.93
Bananas	"	730	1,027.02	639.40
Avocado Pears	2'	432	1,057.15	995.18
Mangoes	2'	96	322.06	372.53
Pineapples	2'	15	26.32	36.29
Pumpkins	lbs.	4,380	172.06	178.51
Cabbages	"	3,911	476.24	477.08
Coconuts	Number	5,761	277.05	284.13
Limes	2'	164	963.88	1,000.33
			15,911.75	13,156.80
Miscellaneous			197.45	281.69
			16,109.20	13,437.99

NOTE.

The exports of any one product are reduced to the most common pack and the c.i.f. values are based on actual costs of produce plus packing and Shipping Charges.

Though it is yet early to assess the full value to the trade of the establishment of a selling agency in Barbados, it is true to state that the operation of the scheme has had the effect of stabilising the local price of products and thereby served as an encouragement to small producers.

Northern Markets. Early in the year reports of the resumption of a passenger and freight service between Canada and the West Indies by the Canadian National Steamships Company were responsible for the receipt by exporters in Dominica of several enquiries for supplies of fruit from the trade in Bermuda.

The release in July of two 'Lady' boats for this service provided for Dominica a very favourable opportunity of access to the Bermuda market. In several ways the Bermuda trade offered an unusual opportunity to our export business for the reason that this market had been foremost in adjusting itself to the post-war increases in prices, that owing to the severe restrictions on imports from Dollar countries and the lack of transport facilities from other sources of supply in the Sterling area, Dominica shared with St. Lucia the advantages of primary consideration as a source of supply for their requirements.

The extent to which these conditions could be explored was, however, limited by number of and the length of intervals between shipping opportunities, and as a result an appreciable quantity of marketable fruit for which an active demand existed in Bermuda was allowed to waste in the field or sacrificed in less remunerative markets.

The following table shows the quantities marketed in Bermuda by this Depot and the average net returns paid to growers.

<i>Produce.</i>	<i>Size of Pack- age in cu. ft.</i>	<i>Quantity.</i>	<i>Net return to Grower per unit of pack.</i>
Oranges	2'	469	14/8½
Grapefruit	2'	10	12/-
Limes	2'	93	13/8
Lemons	2'	34	5/1
Avocado Pears	¾'	1,045	10/4½
Grafted Mangoes	¾'	356	5/10
Mongosteen	¾'	2	2/7
Farine	Bag 7½ lbs.	12,600 lbs.	7½d. per lb.

With regard to citrus the Depot adhered to the pre-war policy to sell as much as possible to the Bermuda market and to dispose of any balance in the Canadian Market.

Encouraged by reports of satisfactory prices in the Maritimes and Montreal and also by the fact that there were direct opportunities direct to Montreal four individual shipments at the height of the Citrus season were consigned to the Trade Commissioner for the British West Indies for disposal in the best market.

The oranges comprising these shipments were not favourably received by the trade which maintained they were below Dominica standard. The grapefruit were rated as 'very good' and compared very favourably with Texas grapefruit. Prices on grapefruit were, however, low for all sizes and Brokers found it difficult to sell our fruit as Wholesalers had purchased in advance a sufficient quantity for their requirements during November and December.

The following table shows the quantities of oranges and grapefruit shipped to Canada, the points of disposal and net returns to Growers.

<i>Destination.</i>	<i>Quantity.</i>	<i>Net returns to Grower per crate.</i>
St. John, N.B.	1,130 Crates Oranges	6/0½
	140 „ Grapefruit	1/2
Halifax, N.S.	395 „ Oranges	2/6
	444 „ Grapefruit	1/5
Montreal, Que.	336 „ Oranges	1/-

The total number of crates (all types) packed by the Depot during the year was 25,731 which shows an increase of 14,534 when compared with figures for the previous year.

War Emergency Work. The staff of the Depot continued to be engaged on Emergency duties which include (a) Slaughter of Livestock (b) Meat & Fish Control (c) Assistance to Butchers.

Vanilla Inspection. In view of the growing importance of vanilla to the economy of the island, and also of the fact that the trade had received reports of the instability of the quality of our exports, an Inspection service was inaugurated for the purpose of examining green vanillas offered for sale at the buying Depots.

The Inspectors were instructed by the Assistant Agricultural Officers and Agricultural Instructors in the out-districts and the Manager was responsible for co-ordinating the work of Inspection.

All exports of cured Vanilla were also inspected for quality, and weights checked prior to shipment.

Meetings, Boards etc. Weekly meetings of the Valuation Committee of Export Values and three meetings of the Fruit Trade Committee were attended by the Officer-in-Charge.

Finance. Expenditure not including Sinking Fund and cost of lighting supplied by the Public Works Department totalled £7,536. 19. 4 and Revenue £5,783. 1. 1½.

G. A. WINSTON,
Manager,
Government Marketing Depot.

APPENDIX II.

AGRICULTURAL LEGISLATION.

The Banana (Amendment) Ordinance, No. 14 of 1947.

The Vanilla Committee Ordinance, No. 16 of 1947.

The Agricultural Produce Export (Amendment) Ordinance, No. 17 of 1947.
 The Vanilla (Purchasing) Depot (Revocation) Order (S.R. & O. No. 1 of 1947).
 The Produce Exportation (Amendment) Rules (S.R. & O. No. 2 of 1947).
 Proclamation *re* Labour (Minimum Wage) Act (S.R. & O. No. 33 of 1947).
 Proclamation Abolishing Close Season of Vanillas (S.R. & O. No. 73 of 1947).

APPENDIX III.

SUMMARY OF INVESTIGATIONAL WORK CARRIED OUT
DURING THE YEAR.

(a) Sugar Cane Variety Trials.

(i) 1st Ratoon.

Object.—The object of the Experiment was to compare five cane varieties viz. B 37161, B 3439, B 35187, B 35245 and BH 10/12 as first ratoons. The Experiment was reaped as plant Canes in 1946 and is described in last year's report.

Layout.—The layout was a 5 x 5 Latin Square.

Site and Soil Type.—The experimental area was a flat of alluvial soil which prior to planting of the last crop was under Cocoa.

Rainfall.—The annual rainfall is approximately 100 inches.

Manurial Treatment.—One application of mixed fertilizer 9:5:7 at the rate of 4 cwts. per acre six weeks after cutting of plant canes.

Results.—The crop was reaped on 13th March, 1947, and was cut as plant canes on 4th - 5th April, 1946. The results obtained are presented in the following table :—

<i>Variety</i>	<i>Tons Cane per acre.</i>	<i>Tins Syrup per acre.</i>
B 37161	61.40	213.2
B 3439	50.63	222.9
B 35187	37.83	129.4
B 35245	29.81	98.0
BH 10/12	26.84	59.7

Based on statistical analysis of yield data varieties fall into two distinct classes, Class (A) B 37161 and B 3439, and Class (B) B 35187, B 35245 and BH 10/12. There is no significance within the classes, but Class (A) is significantly superior to Class (B). This is a similar result to that obtained from plant canes. The combined yields for the two crops are set out hereunder.

<i>Variety</i>	<i>Tons Cane per acre.</i>	<i>Tins Syrup per acre.</i>
B 37161	139.73	514.7
B 3439	115.76	490.4
B 35187	81.47	299.9
B 35245	69.27	267.2
BH 10/12	58.81	203.4

It will be seen that B 37161 and B 3439 have outyielded the other varieties in regard to both tons cane per acre and tins syrup per acre, and all of the four new varieties being tested are markedly superior to the standard variety BH 10/12. The attention of growers is invited to the table below which sets out the possible gross returns per acre for the different varieties for two crops, on the basis of 9/- per tin of syrup.

Variety	B 37161	B 3439	B 35187	B 35245	BH 10/12
Possible gross returns per acre for two crops	£232	£221	£135	£120	£92

(ii) **Plant Cane Variety Trial.**—An experiment to compare eight cane varieties viz. 40105, B 37172, B 4098, B 41227, B 4145, B 37161, B 3337, B 3439 was put down on Soufrière Estate by kind consent of and in co-operation with the owners. The layout of the experiment is in the form of an 8 x 5 Randomised Block. Canes were planted on 4th February, 1947, and will be reaped early next year.

(b) **Tobacco.**—Trial plots were put down on the four Agricultural Stations viz. Grand Bay, La Plaine, Portsmouth and Londonderry. As recorded in last year's report the nurseries for the 1946-47 crop were badly damaged by heavy rains. An attempt was made to grow an out of season crop which resulted in a dismal failure. Exceptionally low yields were obtained due to adverse weather conditions, and attacks of leaf eating caterpillars. At Londonderry Station the plants in addition suffered from Mosaic (*Nicotiana virus*). The crop was reaped in April-May instead of February-March as in the previous year. These results demonstrate the inadvisability of attempting to grow Tobacco out of season.

(c) **Manilla Hemp.** (*Musa Textilis*).—No new plots were established during the year. Existing plots which were planted in previous years commencing in 1944 were maintained. A summary of the results obtained to date is set out below:—

Object.—The purpose of the trial plots was to ascertain whether ecological conditions in Dominica permitted the growing of Manilla Hemp, and the production of good quality fibre.

Method.—Sites were selected in as wide a range of ecological conditions as possible, viz. Riversdale (Interior Central Region), York Valley (Layou area), Trafalgar (Roseau Valley), Moore Park Estate (Northern District), Londonderry (Northern District), Melville Hall Estate (Northern District), Grand Fond Village (Windward Interior), Wanarie Estate (Windward Coastal Area), L'Imprevue Estate (Central Interior).

Results.—Two plots failed as a result of unsuitable conditions, *i.e.* York Valley and L'Imprevue Estate, both as a result of poorly draining clay soils. One plot was destroyed by animals, *i.e.* at Melville Hall Estate.

A summary of data obtained is set out below:—

Plot Site	Date Established	Planting distance.	No. of Stools per plot.	Average No. of Tillers per stool.	Average Height oldest Tillers.
La Plaine (Wanarie)					
Plot A.	May, 1944	10' x 10'	51	6	8'
Plot B.	Sept. 1946	10' x 10'	62	4	5'
York Valley (Layou Valley)	Oct. 1946	10' x 10'	60	4	
Moore Park Estate (Northern District)	Aug. 1945	10' x 10'	109	8	7.5'
Londonderry (Northern District)		10' x 10'	58	8	
Riversdale	May, 1944	10' x 10'	120	4	4.0'
Grand Fond Village	May, 1944 ^(a)	10' x 10'	90	5	6.0'
Grand Fond Village	Sept. 1946 ^(b)	10' x 10'	31	5	3.0'
Trafalgar (Roseau Valley)	June 1944	10' x 10'	60		8.5'

Sample yield.—Freshly cut stalk 24-54 lbs. yielding $\frac{1}{4}$ - $\frac{1}{2}$ lb. fibre.

Yields obtained in Phillipines.—Freshly cut stalk 90-20 lbs. yielding 1.5 lbs. fibre.

APPENDIX IV.

Conclusions.—Ecological conditions in Dominica do permit the growing of Manilla Hemp which yields a fibre of good quality. It is not possible to draw any conclusions with regard to the economics of production. The sample yield figures are very low as compared with figures given for the Phillipines. It would be dangerous, however, to draw any conclusion from such a small sample.

(d) **Vanilla.**—An experiment to test the effect of varying combinations of Lime, phosphate and potash on the yield and incidence of root disease (*Fusarium batatis var Vanillæ*) was put down at Grand Bay Agricultural Station.

Design and Layout.—The experiment comprised three factors viz. the application of Lime (Slaked) superphosphate and muriate of potash in what is commonly known as the three-factor factorial design giving 27 treatments.

The three levels tested were Lime—0·3-6 lbs. per plant; superphosphate $\frac{1}{4}$ - $\frac{1}{2}$ - $\frac{3}{4}$ lb. per plant; muriate of potash $\frac{1}{4}$ - $\frac{1}{2}$ - $\frac{3}{4}$ lb. per plant.

The number of plants per plot is 10, planted at 9' x 5', and *Gliricidia Maculata* was used as supports for the vines. One application of the various fertilizer treatments was made in November when the vines were well established.

Further details will be published in subsequent reports when sufficient data is accumulated.

APPENDIX IV.

REPORT ON GOVERNMENT OWNED ESTATES.

(a) MELVILLE HALL.

POLICY.

The policy followed was to maintain the present cultivation in accordance with approved methods of estate practice. Development work consisted of planting of dwarf coconuts, the preparation of a site for Cocoa, and raising of pigs.

WORK OF THE ESTATE.*Coconut Cultivation.*

Routine.—All necessary cutlassing was carried out.

Supplying.—Field 9 previously abandoned, but cleared in 1946 was supplied with 52 selected plants.

Manuring.—A manurial programme was laid down and partly carried out. Fields 3, 5 and part of Field 8 were manured with a fertilizer consisting of a mixture of 8 lbs. of 4-12-6 and 2 lbs. of superphosphate per palm.

The manure was broadcasted in a circle 4 ft. wide and 3 ft. away from the stem of the palm.

Crop Harvested.—Total number of nuts gathered were 361,670.

Rejected Nuts ..	..	3,689
Nuts disposed of ..	..	2,805
Nuts made into Copra ..	..	355,086

Total weight of Copra made tons cwt. qrs. lbs.

(a) Old Estate Drier .. 37 6 1 17

(b) Malayan Drier .. 33 19 2 6

71 5 3 23

Weight of Burnt Copra .. 13 3 19

Net weight of Saleable Copra.. 70 12 0 4

The average number of nuts used to make one ton of copra in

(a) The old Estate drier	5,300
(b) The Malayan drier	4,654
(c) Mean of $a + b$	4,977

Lime Cultivation.

Routine.—The fields were given a light pruning.

Crop Harvested—100 barrels were gathered and sold to Messrs. L. Rose & Co. Ltd., at the rate of 7/- per barrel.

Grapefruit and Orange Cultivation.

Routine.—The fields were weeded twice for the year, and two applications of manure given. The first application was in March when 3 lbs. of 4:12:6 was applied to each tree. The second application was given in December when 8 lbs. of 5:10:10 plus 2 lbs. superphosphate was applied per tree.

Crop Harvested.—8,000 grapefruits and 1,100 oranges were disposed of.

Dwarf Coconut Cultivation.—In April a suitable site was selected, cleared, lined out on the contour 25' x 25' apart. This area was planted in June, and contains 34 plants. The topography can be described as gentle sloping.

The second area which is on a steep slope, consist of 48 plants also lined on the contour 25' apart and was planted in September.

The third area, the topography of which may be described as undulating, was planted in December. The distances between the plants are 22' x 22', there being 129 plants.

The entire area was wired off with two strands of barbed wire.

The entire planting of catch and cover crops was commenced towards the ending of the year.

The area under Dwarf nuts is estimated to be 3 acres.

Cocoa Cultivation.—A suitable site was selected and $\frac{3}{4}$ of an acre was cleared, lined out on the contour 12' x 12', holes dug, and ground and overhead shade planted in preparation for the planting of rooted cuttings from selected clones.

Livestock.

Working Oxen.—One new bull was purchased, castrated and trained to work in the estate carts. Two of the old oxen were disposed of to the butcher.

Pigs.—During the year 10 barrows, three sucklings and two sows were disposed of.

At the ending of the year a breeding pen of 4 sows and a large black boar was maintained.

One Berkshire sow, originally from British Guiana, died in December soon after producing a litter of 7.

Field No. 1, an area of approximately $3\frac{1}{2}$ acres was fenced off with hog wire to serve as a run for the pigs.

Buildings.—Minor repairs were made to the dwelling house and store room.

The ground floor of the store was cleared and converted into additional store space with a concrete floor.

Manurial Experiment.—A small manurial experiment consisting of four treatments and replicated twice was laid down to test out the effect on yield if any, of different fertilizers—potash, phosphate and a complete N.P.K. mixture.

The manures were applied in November.

To obtain correct yields the plots will have to be hand picked at regular intervals.

Larceny.—There were a number of petty thefts during the year, this consisted chiefly of stealing of cattle chains.

The stealing of coconuts was confined to the more remote fields.

Labour.—All the labour necessary to run the estate was easily obtainable.

STATEMENT OF CASH RECEIPTS & EXPENDITURE FOR 1947.

MELVILLE HALL ESTATE.

<i>Receipts.</i>				<i>Recurrent Expenditure.</i>			
	£	s.	d.		£	s.	d.
Sale of Copra	2,430	7	4	1. Crops	623	16	4
„ Grapefruit	28	10	1	2. Livestock	175	14	8
„ Limes	35	11	1	3. Staff	356	13	11
Other Produce	7	3	3	4. Transport	185	1	8
„ Plants (Coconuts)	6	12	8	5. Contingencies (Main-			
„ Livestock	51	17	6	tenance of Buildings,			
Miscellaneous (Cattle				Yard, Aqueduct, and			
Pasturage Rents				Estate Roads)	454	17	4
Garden Rents							
Impoundage Fees)	56	4	1	By Balance	820	2	1
	2,616	6	0		2,616	6	0

Capital Expenditure.

1. Purchase of Livestock	39	8	10
2. „ „ Fencing			
Wire, Staples			
& Equipment	161	14	0
3. Material for Manager's			
house	371	13	4
4. Construction of New			
Store Room	130	12	0
5. Extension of Cultivation			
(a) Dwarf Coconuts	56	12	11
(b) Cocoa	13	17	3
	773	18	4

(b) **Goodwill Estate.**—The work carried out on the Estate was concentrated on maintaining the existing lime cultivation, and the extension of cultivation of varieties of sugar cane in place of the old varieties used hitherto.

The tenants were encouraged to plant as much food crops as possible.

Weather Conditions.—General climatic conditions during the year were favourable.

Pests and Diseases.—The most persistent pests were peasants' cattle, which in the dead of night were released to roam at large causing much damage both in the lime and banana cultivations.

Pottersville Land Rents.—Land situated at Pottersville was rented out to the tenants at the same rates as formerly.

Most difficulty is encountered in the collection of these rents, a great portion of them being carried into the ensuing year as arrears of revenue, thereby entailing much additional work.

Amount collected was	£236.	16.	1
Arrears	251.	5.	9

Lime Cultivation.

Routine.--All necessary weeding and cutlassing of the fields were carried out.

The cultivation throughout was flat forked, and available pen manure and mulch were applied in an endeavour to raise the humus content of the soil which is very low.

Little pruning operations were carried out, the fields being pruned the previous year.

Manure.--Pen manure and megass were applied throughout. No artificial manures were applied to the cultivation.

Crops Harvested.--The total number of barrels harvested and sold were 1,150 barrels.

Receipts for same being £124. 16. 11 (green limes)

68. 1. 6 (yellow limes)

Total . . . 192. 18. 5

Arrears .. . 235. 2. 10

£428. 1. 3

The cultivation has steadily improved in condition and shows promise of a further increase in crop next year.

Cane Cultivation.--Plants of new varieties of cane, namely 4098, 37161, 3439, 4362, 43291, 41227 and 4145 were distributed to the tenants, and a marked improvement has been noticed in the cultivation of these compared to the older varieties.

The most outstanding of these varieties proved to be 37161 and 4098.

A trial plot of 4098 planted 5' x 5', 1742 holes to the acre when cut and weighed proved to have yielded 70½ tons canes and 7½ tons fodder per acre.

All cane cultivation is carried out by tenants on a half-share basis with the exception of nurseries and the small experimental plot planted and cultivated by the Estate. The number of tenants at the end of the year was 214.

Rum.--Tenants were paid £302. 3 8½ for canes purchased by the Estate during the year.

The total gallonage of rum manufactured for the year 1947 was 4,540 gallons of which 2,929 gallons were sold and a surplus of 1,548 gallons were carried over to 1948.

Machinery.--The machinery was in a poor state of repair when the Government acquired the Estate and the Colonial Engineer had to be called in to give advice and help.

In the course of the year the cane mill driven by steam was twice exported to Barbados for repairs.

The mill on the first occasion arrived too late to start crop before 4th June, 1947, and a great quantity of canes had to be sold to both Canefield and River Estate to be manufactured.

On the second occasion the mill returned in time to start crop early, but the steam coil of the Rum Still was at the same time undergoing testing and repairs in Barbados.

The steam coil arrived at the end of January, 1948, when normal operations were commenced.

The waterwheel and mill leased by Messrs. J. R. H. Bridgewater & Co. were completely renovated and the wheel fitted throughout with new lining and buckets. It was also chipped and painted.

Vats.--Repairs had to be effected on 6 of the fermenting vats, new bottoms and defective staves being replaced as well as new pipe lines and fittings.

Boiler continues to give good service in spite of a small leak in the shell.

Buildings.--Several minor repairs and additions were made to the works, and the Overseer's quarters were re-shingled and minor repairs effected.

The small labourer's house was renovated and transported to a more favourable site for use by the stock-man of the Agricultural Department.

Canal.—The canal which supplies the yard and buildings with water had been blocked on several occasions by the flooding of the river and clearing of same had to be effected.

Livestock.—Five Holstein cows and heifers were imported from St. Lucia. From this stock 3 calves were produced, 2 bulls and 1 heifer. One ox was purchased and one exchanged.

Of the Holstein cattle one died from drinking cassava water, and a heifer which fell sick was slaughtered and found to have contacted cancer of the womb.

Female Cattle (Meat Market.)—Several cows purchased by the Market Authorities were sent to Goodwill to be pastured until finally disposed of.

In the majority of instances these cattle were of such an old age, poor type, run down in condition, badly infested with ticks, that it was hardly worth the trouble and expense.

Farine.—A few of the tenants planted cassava which was reaped in the usual way, half-share belonging to the Estate.

Banana Cultivation.—Bananas planted under the Food Relief Scheme received normal attention and have in spite of all difficulties survived.

Thieves have been rampant, and peasants' cattle causing considerable damage to the plants and fruit.

This catch crop has greatly assisted the lime cultivation through which it was planted and has encouraged growth of more succulent type of grass in the fields.

Fodder Plots.—Plots of Guatemala and Elephant grass were established, and these augmented the supply of fodder from the Estate's old Guinea Grass plots.

Miscellaneous Crops.—Mangoes, Breadfruits and Avocado Pears were harvested and sold locally, yielding an income of £47. 11. 1.

A small portion of the mango and banana crops were converted into rum.

General.—The Estate had made marked improvement over the year, the cultivation of cane by the tenants are far more extensive than 1946

APPENDIX V.

GOODWILL ESTATE TRADING & PROFIT & LOSS ACCOUNT AS AT 31ST DECEMBER, 1947.

LIABILITIES.		£	s.	d.	£	s.	d.	ASSETS.		£	s.	d.	£	s.	d.
To Stock on hand on								By Sales (Net)					1,636	3	8
1st January, 1947	..	19	10	0				" Cash Pottersville Rents..	236	16	1				
" Manufacturing Wages	..	804	16	10				" Cash Estate Land Rent..	3	12	11				
" Motor Transport	..	150	13	1				" Cash Estate's House Rents	100	0	0				
" Cartage	..	40	9	4	1,015	9	3	" Cash Repayment Advances	110	3	11	450	12	11	
" Repairs	..	1,517	19	5				By Stock in hand per							
Less 90% carried forward	..	1,366	3	6	151	15	11	Valuation.							
To Purchase	..	1,517	16	11½				Rum	574	3	4				
Less 75% carried forward	..	1,138	7	8½	379	9	3	Barbedwire	33	0	0				
To Working Expenses	..	863	16	10½				Fuel	41	13	4				
Less 5% carried forward	..	43	3	1	820	13	9½	Fertilizer	44	0	0	692	16	8	
					2,367	8	2½	By Amount recoverable							
To Gross Profit transferred								from Tenant's Advances.					66	0	4
to Profit & Loss Account.					478	5	4½						2,845	13	7
					2,845	13	7	By Gross Profit from							
To Gross Loss 1946	...	131	6	7				Trading Account	478	5	4½				
Balance being net profit															
for year carried to															
Capital Account...	..	346	18	9½											
		478	5	4½						478	5	4½			

GOODWILL ESTATE BALANCE SHEET AS AT 31ST DECEMBER, 1947.

LIABILITIES.		£	s.	d.	£	s.	d.	ASSETS.		£	s.	d.	£	s.	d.
Capital Account as on								Cash Paid into Treasury					2,086	16	7
1st January, 1947	..	25,943	0	3½				Sundry Debtors:							
Add Profit from Trading								Rental of Works					200	0	0
Account	..	478	5	4½	26,121	5	8	Pottersville Land Rent	200	0	0				
								Produce	385	1	2				
									585	1	2				
								Less 10% for Bad and							
								Doubtful Debts					526	11	1
								Tools and Equipment					1,138	7	8½
								Expenditure on Repairs							
								brought forward					1,366	3	6
								Working Expenses							
								brought forward					43	3	1
								Fire Insurance & Licences..					94	15	0
								Machinery, Plant, Lands &							
								Premises less Depreciation.					20,965	8	8½
					26,421	5	8					26,421	5	8	

APPENDIX V.

COCOA DEVELOPMENT IN DOMINICA.

(An Address To The DOMINICA PLANTERS ASSOCIATION)

BY

Mr. F. W. COPE,*Cocoa Agronomist to the Windward Islands.*

ON

28th MARCH, 1947.

The growing of cocoa in Dominica is an industry now over 100 years old. During the years between the first planting of cocoa and the present day, the industry has passed through periods of prosperity and through periods when the grower felt it was just not

worth while to cultivate his cocoa fields. This is, of course, equally true of the other cocoa producing countries and today the more progressive lands are casting round to put their industries on a sound economic basis by adopting intensive methods of cultivation. No planter today, faced as he is with increasing cost of production, can afford to continue cultivating cocoa in ways which do not yield him the maximum possible returns from his lands. Increased production per acre must be every planter's ideal.

Today the cocoa industry faces reasonably bright prospects. Present prices have never before been realised for raw cocoa and although producers can scarcely hope for a continuance of such unusually high prices, I think they can look forward to remunerative prices for a period of 25 years. It is well known that the world's production of cocoa is falling and will continue to fall, since the West coast of Africa, long the largest producer of cocoa is going out of production on account of the ravages of diseases and low standards of cultivation. A serious virus disease (Swollen Shoot), coupled with serious insect damage by *Sahlbegella*, is working havoc in West Africa; furthermore, the areas of land suited to growing of cocoa in West Africa have all been planted up. I am informed that the usual peasant-grown cocoa of Africa lasts for only 20 years, so poor is the cultivation given. Most of the cocoa growing countries of South America, too, with the possible exception of the interior of Brazil, are riddled with Witch's Broom disease and the production of fine quality cocoas has markedly diminished. With the exception of part of Brazil and some of the high Colombian valleys, there are very few areas in the Western hemisphere capable of growing quality cocoa free of serious pests. The Windward Islands are in this favourable position.

Trinidad and Grenada have already begun the rehabilitation of their cocoa industries along sound scientific lines; and St. Lucia has recently accepted a scheme of the same type. Trinidad has given the lead, chiefly by reason of the research work done at the Imperial College of Tropical Agriculture. These islands are replanting their areas ecologically suited to cocoa with cuttings or slips from strains selected for heavy bearing and quality of the prepared bean. Selection, of course, has always been practised whenever crops are grown, but it is only since 1930 that selections in cocoa have been made on strictly scientific lines, with due regard to the evaluation of a tree's performance based on (a) the total number of pods produced over a period of years (b) the average bean content of the pods from the tree (c) the average weight of the bean (d) the area occupied by the tree and (e) the absence of undesirable factors such as pollen incompatibility, slow growth, susceptibility to diseases, etc. The Imperial College is now in a position to recommend with great confidence some of its selections, particularly such clones as ICS 1, 6, 8, 16, 32, 45, 60, and 95, all of which have been established in an intermediate nursery in St. Vincent and pronounced free of any disease by Imperial College Mycologists. ICS 1 at River Estate, for example, under normal methods of cultivation, has from nearly a 100 six-year old cuttings produced quality cocoa at the rate of 8 cwt. per acre; and the yields are rising yearly. Even 3 years after planting, ICS 1 at River Estate gave nearly 3 cwt. of dry cocoa per acre; and this is an area notably poor in soil and from cuttings severely attached by Witch's Broom and cocoa beetles! Given good soils and freedom from pests, such a clone might easily attain a yield of 10-11 cwt. per acre six years after planting. In Grenada, we have accumulated 76 strains from amongst the local trees as being sufficiently promising for vegetative propagation and after three years of clonal trials, we shall be in a position to offer Grenada planters planting material which we can guarantee to be genuine heavy bearers. Already some of our Grenada strains are showing great promise. One selection, No. 33, may eventually compete with ICS 1, for precocity: I have seen a cutting of No. 33 produce a pod five months after planting! And a cutting of our No. 29, planted as a supply amongst old cocoa, produced 60 pods last season—it will be 4 years old this August. Our No. 32 is said by manufacturers, who have tested samples submitted by us, to be a wonderful-flavoured cocoa.

The production of rooted cuttings is a fairly expensive operation, even when carried out on a large scale. It requires special equipment and careful supervision. But it is well worth it when you can offer planters cuttings which you know to be unexcelled for yield of good beans. Planters may ask, "Why not use the cheaper method of propagating from selections by seeds?" The position reduced to its simplest terms is that seedling progenies turn out disappointing and no inheritance of any of the desirable characters, let alone any combination of characters (such as heavy bearing, vigour, good beans) can be ensured.

From 1,000 seedlings of a selected parent tree you might get a small number reproducing the parent's good characters whilst the vast majority will not favour the parent. The reason for this lies in the high degree of cross pollination which exists in cocoa. On a self-incompatible cocoa tree, *all* the pods produced result from uncontrolled cross-pollination and the odds are greatly in favour of the pollen being from a mediocre male parent, with consequent mediocrity in the offspring. With self-incompatible trees, Voelcher and I have demonstrated that quite half of the pods set are cross-pollinated also. Even controlled cross-pollination between selected trees cannot guarantee the uniformity of inheritance of *all* the parents good points. The utility of seedlings in breeding programmes is not denied—indeed the only chance of improving cocoa strains still further is by controlled cross-pollination with the hope that, say 1 in 1000 seedlings might be better than either parent. In 50 to a 100 years from now geneticists may evolve cocoa strains which come true to type as seeds—the only cocoa known to come reasonably true to type at the present time is the very inferior calabacillo grown in West Africa and Brazil. For the present, therefore, replanting in the West Indian islands (as well as in Colombia, Ecuador and Mexico) is being carried out with cuttings from selected strains. The great advantage of cuttings established on their own roots is their uniformity and adaptability to special conditions. If a selection is made for vigour of growth, you can be sure that all the cuttings established from the selection will be vigorous growers; if, therefore, it is considered that in any area of Dominica a particularly hardy type of cocoa would be needed, such an area can be planted with cuttings from a strain noted for its vigour and you will have uniformity in performance. The Agricultural Department of Dominica has wisely undertaken selection work amongst the local tree population and is to be commended for its foresight in selecting for high yields and good beans coupled wherever possible with vigour of growth.

From the Dominica trees, therefore, the Department will eventually be able to select a half dozen or so outstanding trees for vegetative propagation. Any scheme for improving the cocoa industry of Dominica would be well advised to make good use of its local selections, but it would be equally ill advised if it did not utilise the cream of the selections made in other lands, provided the introductions could be made without importing diseases. Fortunately Grenada is free of any pests not already occurring in Dominica so that our best Grenada selections can be brought into Dominica without cause for anxiety. The use of Imperial College selections from the St. Vincent nurseries is *strongly* recommended, since the budded plants there have been inspected at frequent intervals by competent mycologists and pronounced completely free of any disease. St. Lucia, with no local selections available, is starting from scratch with Trinidad selections from St. Vincent.

Planters may ask, "How long will it be before our estates can be supplied with cuttings?" I estimate that it will be at about three years before any propagators erected in Dominica are in good production. It will be about 18 months before a nursery for the production of cuttings can be established and the budded plants in the nursery will begin to yield cuttings in volume about a year later. This 3-year wait may be disappointing to you, but it should be borne in mind that the early bearing of cuttings will compensate you to a large extent for having to wait. I hope you feel by now that cuttings from selected heavy yielding strains will be worth while waiting for!

One point to be mentioned in concluding this preamble to the presentation of a scheme which Mr. de Verteuil and I have drawn up is that the planting of heavy bearing strains will demand full attention to cultivators if the potentialities of the cuttings are to be realised. Regular manuring to make up for the extraction of minerals from the soil by reason of heavy cropping will be necessary, as well as attention to the provision of wind breaks and the observance of soil conservation methods. No planter, of course, will begrudge this extra care when he is getting 10 cwt. per acre from his lands!

And now gentlemen, I beg leave to present to you the outline of a scheme, with estimates, for the rehabilitation of Dominica's cocoa industry. Afterwards, Mr. de Verteuil and I will be glad to have your comments and suggestions.

Scheme for the Improvement and Extension of the Cocoa Industry in Dominica.

Introduction.

It is estimated that in the 1904/15 period the average production of raw cocoa from some

3,000 acres in Dominica, was approximately 600 tons per annum. By 1931 the island's production had fallen to 150 tons and as far as can be ascertained has remained at that level. The area under cocoa today is estimated to be about 1,000 acres. The cause of the rapid decline, accelerated as it was by hurricane is generally ascribed to uncertainty of markets and low prices, resulting in widespread neglect of cocoa cultivations. In particular, the areas of peasant-grown cocoa virtually disappeared. No replanting on any appreciable scale has taken place in the last 25 years and the average age of existing cultivations is said to be some 40-50 years. Average production today is reckoned to be 300 lbs. of dry cocoa per acre.

2. The recent improvement in the prices paid for raw cocoa and the favourable long-term market outlook have created renewed interest in the growing of cocoa in Dominica. Accordingly, Government is anxious to encourage the rehabilitation of the industry along approved lines as indicated below.

Outline of Proposed Scheme.

Intensive use of the Land a basic requirement.

3. It is proposed that the scheme should be so designed as to satisfy the requirement that it must fit into a general plan of agricultural improvement for Dominica, based on the intensive use of the land, in accordance with the recommendation of the West Indian Royal Commission of 1938-39.

Method to be adopted for effecting proposed Improvement.

4. It is proposed that a target area of 800-1,000 acres in the areas of Dominica ecologically suited to the growing of cacao should be planted with selected strains of high-yielding cacao at the rate of 80-100 acres per annum.

5. Government's intention in the operation of the scheme is to provide rooted cuttings of approved strains combining high yields and quality beans for commercial planting. The sole condition attached is that the areas to be planted must be clean felled and prepared in accordance with the directions and to the satisfaction of the Agricultural Department.

Source of Selected High-yielding Strains.

6. The limited acreage under cocoa in Dominica gives limited scope for selecting an adequate number of suitable high-yielding strains from the local tree population. The Agricultural Department has recorded yields and bean weights on trees which are seedling progeny of some of the Imperial College (Trinidad) selections planted at the Botanic Gardens and two estates; from these a number of selections might be made. It is proposed that replanting in Dominica should be undertaken with rooted cuttings from these selections, augmented by high-yielding strains imported from the intermediate cocoa nursery in St. Vincent. A limited number of the most promising strains selected in Grenada under the Cocoa Industry Development Scheme would also be imported direct.

Details & Estimated Cost of Scheme.

7. It is proposed to establish and operate one cocoa station (in the first instance) either in the Northern District or in the Layou Valley area. Budwood of local selections, Imperial College selections and of Grenada selections would be received and established on locally grown root-stocks in nurseries at the propagation station, where one propagator with a special type of roof for budding work would be constructed. Rooted cuttings would subsequently be produced in propagating units for distribution for commercial plantings.

8. It is estimated that when the nurseries are well established the maximum annual output would be 25,000 cuttings for planting 80 acres at 300 cuttings per acre. Three propagating units each capable of producing 8,000 cuttings yearly, would be required. Only one need be constructed in 1947-48 and this unit should have a special type of roof for budding work. The other two units would be erected in 1948-50.

9. Since the imported strains of cacao will have already been tested in their respective islands, no larger scale clonal trials are contemplated. Any small scale trials of Dominica selections will be conducted on the cacao stations and replicated on estates if necessary.

It will almost certainly be desirable to conduct cultural and manurial trials in due course, and it is proposed that they should also be conducted with clonal material on privately owned land.

10. The scheme will be operated by the Agricultural Department; technical advice will be available to the Agricultural Superintendent from the Cocoa Agronomist, Windward Islands, through the Director of Agriculture. It is recommended that the Dominica Planters' Association appoint a committee to serve as an advisory body to Government.

11. *Estimate based on 3 Prepagators at one Station.*

(a) Capital Expenditure	£7,840
(b) Recurrent Expenditure over 10 year period	£19,269
Total ..	<u>£27,109</u>

DISCUSSION ON THE ADDRESS.

1. *Damage of importing Witch Broom.*

There should be no danger of importing Witch Broom or any other disease into Dominica through cuttings obtained from St. Vincent. Though plants grown in St. Vincent were originally from Trinidad stock they went through a long period of quarantine in St. Vincent and were regularly inspected by expert mycologists for any signs of disease.

2. *Cost per acre of replanting.*

In Grenada the cost per acre was approximately £20, but this was largely offset by the sale of crops grown as shade between the young trees for the first year or two.

3. *Approval by Department of Agriculture.*

It would be necessary for Planters to have the approval of the Agricultural Department as to the suitability of soil and other necessary conditions and it was thought that at least a nominal charge should be made for plants supplied.

4. *Planting distance.*

In Grenada the planting distance varied as to the nature of the soil. In good soils the plants were set closer than in poor ones, the average being 10 ft. x 10 ft. In Dominica however, it was thought that 12 ft. x 12 ft. would be more suitable.

5. *Possibility of importing rooted cuttings.*

The expense and difficulties of transport would make the importation of rooted cuttings difficult as soil importations are prohibited and cuttings would have to be shipped with bare roots.

6. *Shade.*

No permanent shade was used in Grenada.

7. *Maximum altitude at which Cocoa could be grown.*

Mr. Cope thought that 800-900 feet was as high as Cocoa should be planted but agreed that up to 1,200 feet might be feasible in Dominica given the necessary conditions.

8. *Life span of cuttings.*

Nothing was of course yet known regarding the life span of cuttings as compared to the life of seedlings, but in any case it was more economical to plant cuttings on account of the very much higher yield.

9. *Conditions necessary for a propagation station.*

Flat lands with an abundant natural supply of fresh water were essential. Experiments on hillsides could not be undertaken at the propagation station.

26. *General comments.*

The large majority of the soil samples taken from the various farms in the district contained a sufficiency of nitrogen and potash but that phosphate appeared to be lacking. The soil is becoming exhausted in phosphorus. Several soils were not tested.

27. *General comment on the results of the tests.*

The Agricultural Department would be willing to grant assistance to the farmers in the purchase of fertilizers provided their conditions were suitable.

28. *Resolution proposed by Mr. Martin.*

The following resolution was adopted by the Council and it was resolved to put the scheme into operation as soon as possible.

RAINFALL RETURNS, DOMINICA, 1947.

STATIONS.	JAN.	FEB.	MARCH	APRIL.	MAY.	JUNE.	JULY.	AUGUST.	SEPT.	OCTOBER.	NOV.	DEC.	TOTALS.
1. Botanic Gardens	L.	9.23	2.75	2.61	5.53	4.67	11.73	5.73	8.69	4.02	7.10	8.67	72.20
2. Bath Estate	L.	7.91	2.41	2.07	5.25	5.02	12.35	4.80	7.93	4.11	6.11	9.16	70.17
3. Blenheim	W.	8.32	3.00	4.03	8.42	8.01	9.70	8.09	12.13	11.11	6.21	7.88	90.91
4. Colliant Agri. Station	L.	3.30	2.28	0.16	2.07	2.55	6.67	6.81	6.57	4.85	4.36	4.58	45.70
5. Clarke Hall Estate	L.	11.95	3.60	2.15	6.23	6.07	11.05	8.35	11.10	1.65	5.60	8.10	87.03
6. Carcfield Estate	L.	6.97	4.12	2.06	6.55	5.39	9.38	10.93	11.77	1.42	3.45	4.61	71.81
7. Debec	W.	9.50	3.16	7.31	9.15	6.24	9.87	9.61	14.13	12.02	12.61	11.43	117.51
8. Fairmount Station	L.	5.26	3.42	3.22	6.39	5.58	11.67	6.35	9.17	3.79	6.98	10.00	49.92
9. Grand Bay Agri. Station W.	L.	9.33	1.58	7.61	9.11	7.56	12.16	6.33	11.96	8.05	4.91	10.01	136.24
10. Gravelled (Common)	L.	11.31	6.03	5.25	4.61	3.51	20.11	8.63	15.23	7.83	4.71	10.19	121.17
11. La Plaine Agri. Station W.	L.	7.61	2.86	7.12	7.93	8.16	10.32	11.32	17.00	16.19	6.31	9.20	112.97
12. L'Impresque	L.	13.03	6.90	4.63	5.02	7.92	13.13	7.06	14.43	6.62	5.62	9.21	101.36
13. Lacroix Park	L.	21.02	7.73	7.16	12.79	42.11	24.22	11.11	23.37	8.17	16.19	11.17	159.62
14. Londonderry Agri. Station W.	W.	7.37	2.61	5.11	7.69	1.32	9.17	6.10	9.26	10.37	6.21	7.93	79.26
15. Moore Park	L.	9.25	2.92	3.22	7.90	7.98	8.40	8.01	10.30	10.95	7.80	9.00	91.31
16. Portsmouth Agri. Station W.	L.	12.17	5.05	4.17	8.55	7.10	12.17	8.12	13.03	9.34	9.38	3.49	101.20
17. Phe. Millaire	W.	10.76	3.35	7.23	7.29	7.11	12.10	9.17	16.13	16.74	9.57	10.99	115.26
18. Picard	L.	9.34	3.15	3.32	5.11	6.35	10.38	7.76	14.01	6.34	5.23	6.30	127.63
19. Ridgefield	L.	11.67	5.61	5.61	10.61	7.77	12.11	9.17	16.01	7.21	9.16	13.40	126.19
20. St. James Ford	L.	76.06	2.11	12.30	11.31	12.86	21.35	15.60	21.01	13.32	11.11	9.21	162.19
21. St. John	L.	70.00	7.00	9.90	12.00	11.50	21.60	13.50	22.00	11.30	9.10	17.70	166.30
22. Springfield	L.	11.75	5.02	6.05	3.23	3.91	16.21	3.23	15.15	5.19	6.07	6.89	98.12
23. St. Louis	W.	11.47	3.09	3.13	9.14	7.11	13.35	6.21	10.23	7.10	1.11	9.57	320.38

Mean Rainfall 23 Stations ... 102.11 inches

8 Leeward Stations ... 25.97

4 Windward ... 100.62

8 Inland ... 129.95

RAINFALL RETURNS 1928-1947.

RAINFALL AT THE BOTANIC GARDENS, DOMINICA, 1928-1947.

	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.	1938.	1939.	1940.	1941.	1942.	1943.	1944.	1945.	1946.	1947.	Monthly Mean Rainfall.
January ...	6.60	5.18	10.65	1.47	5.47	7.30	4.81	2.37	3.46	13.24	6.73	4.13	1.67	5.00	4.16	5.70	4.24	1.76	6.12	9.23	5.46
February.	4.25	3.13	2.07	1.05	1.57	2.13	1.70	1.59	2.50	3.40	1.43	2.84	1.45	.47	2.25	1.01	6.89	9.14	5.80	2.07	2.83
March ...	6.30	7.36	3.89	.59	1.56	2.37	3.36	6.90	.82	1.84	2.69	4.38	2.16	2.05	.97	5.46	1.89	1.29	1.47	2.75	2.98
April ...	4.16	1.27	5.01	.51	2.33	2.03	2.91	1.45	3.04	2.61	.72	5.62	1.00	2.82	7.14	3.34	1.65	1.11	2.88	2.61	2.71
May ...	2.25	2.80	2.21	1.70	5.07	2.26	3.82	4.27	2.34	1.48	1.41	.86	1.34	5.53	4.86	3.20	8.55	1.95	3.18	5.53	3.23
June ...	6.68	10.87	7.32	9.98	10.72	7.05	2.59	5.04	6.47	6.57	19.56	4.90	4.65	5.39	9.18	6.25	7.20	6.21	7.04	4.67	7.41
July ...	6.58	13.13	7.90	18.45	8.05	12.30	9.54	13.47	18.48	5.60	13.44	7.18	7.97	13.94	13.86	6.10	12.98	11.17	6.15	11.73	10.90
August ...	12.80	12.55	6.76	17.44	7.23	7.94	7.61	8.87	10.38	6.20	27.92	6.96	6.96	7.52	11.13	10.93	9.19	9.05	9.44	5.73	10.13
September.	8.10	5.63	14.66	13.51	6.13	11.51	4.08	12.93	11.14	4.40	10.77	6.52	2.55	10.62	11.76	7.99	5.74	15.43	8.34	8.09	8.99
October ...	4.35	12.19	3.15	9.71	6.72	9.26	3.89	5.43	7.65	3.74	4.48	15.42	9.00	6.98	5.91	9.69	6.39	10.90	4.40	4.02	7.16
November.	7.93	14.39	5.51	11.90	13.83	11.04	5.58	3.39	12.14	20.85	12.34	5.91	10.97	12.45	24.82	5.38	9.59	2.98	13.91	7.10	10.60
December.	5.38	8.48	3.66	7.56	5.21	7.03	9.46	6.24	10.84	5.43	6.14	3.57	9.96	4.81	8.47	6.60	6.81	4.33	4.34	8.67	6.64
Totals ...	75.38	96.98	72.79	93.87	73.89	82.22	59.35	71.95	89.26	74.86	107.63	68.29	59.68	77.5	104.51	71.65	81.12	75.32	73.07	72.20	-

Average year = 79.08 inches

METEOROLOGICAL SUMMARY, BOTNAIC GARDENS, DOMINICA, 1947

Year. 1947.	PRESSURE.				TEMPERATURE.								RELATIVE HUMIDITY.		RAIN-FALL.	
	Corrected & reduced to 32° F., M.S.L.				ABSOLUTE.		MEAN VALUES.						MEANS.		AMOUNT.	
	Highest.		Lowest.		MEANS.		MAX.	MIN.	DRY BULB.		WET BULB.		9 a.m.	3 p.m.	9 a.m.	3 p.m.
	IN.	IN.	9 a.m.	3 p.m.	IN.	IN.			° F.	° F.	° F.	° F.				
	IN.	IN.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	° F.	%	%	IN.	IN.		
January ...	30.09	29.87	30.00	29.92	85	66	82	70	75	80	72	73	83	68	9.23	
February ...	30.07	29.83	30.00	29.93	89	62	86	68	77	83	73	75	82	66	2.07	
March ...	30.10	29.91	30.00	29.96	89	68	88	69	78	85	73	75	74	59	2.75	
April ...	30.06	29.91	30.02	29.95	89	67	88	70	80	84	73	73	70	58	2.61	
May ...	30.13	29.91	30.01	29.95	91	68	86	72	79	83	73	73	72	58	5.53	
June ...	30.06	29.90	30.00	29.95	91	63	89	76	82	86	77	78	74	71	4.67	
July ...	30.07	29.90	30.00	29.96	89	71	87	73	81	85	78	80	84	76	11.73	
August ...	30.07	29.90	29.98	29.93	91	90	94	73	82	88	78	81	81	71	5.73	
September ...	30.02	29.84	29.96	29.91	95	72	91	73	83	86	83	81	81	76	8.09	
October ...	29.98	29.80	29.92	29.87	92	72	90	74	84	87	78	80	74	70	4.02	
November...	30.80	29.80	29.93	28.86	92	67	88	72	82	85	76	77	74	67	7.10	
December...	30.06	29.81	29.95	29.87	90	67	85	70	78	89	75	77	82	69	8.67	
YEAR AVERAGE ..	30.06	29.86	29.98	29.92	90	69	88	72	80	85	76	77	78	67	6.01	

Highest Barometer Reading

30.13 in. on 10th May.

Lowest

29.80 " " 29th October & 26th, 27th November.

Highest Maximum Temperature

95° F " " 15th September.

Lowest Minimum Temperature

62° F " " 1st, 2nd, 8th, 9th February.

Greatest Rainfall in 24 hours :

3.75 ins. " 25th July.

